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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/036,417

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Ernest A. Carroll

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EXAMINER

BILGRAMI, ASGHAR H

ART UNIT

PAPER NUMBER

2143

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/036,417	Applicant(s) CARROLL, ERNEST A.	
	Examiner ASGHAR BILGRAMI	Art Unit 2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9,10,12-14 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9,10,12-14 and 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-7, 9, 10, 12-14 and 19-22 rejected under 35 U.S.C. 103(a) as being unpatentable over Hendrickson et al (U.S. 6,529,615) and Abel et al (5,467,271).

3. As per claim 1 Hendrickson disclosed a method of practicing precision farming wherein at least one agricultural operation is to be conducted with respect to a predetermined agricultural field, comprising the steps of: a) providing an air breathing, self-powered miniature aircraft weighing less than fifty-five pounds and having image acquisition apparatus comprising at least one of the types: visible light camera, thermal (e.g., infrared) image acquisition apparatus, synthetic aperture radar, and laser radar carried there aboard b) flying said miniature aircraft along a flight path controlled at least in part remotely therefrom (col.11, lines 26-39); c) surveying the agricultural field by acquiring at least one image of the agricultural field from the image acquisition apparatus (col.4, lines 8-12, figures 2 & 4c); d) analyzing the at least one image obtained in said step of surveying the agricultural field to determine at least one local condition of the agricultural field and at least one requirement of the agricultural field relative to an agricultural operation; and e) conducting the agricultural operation with

respect to the agricultural field in a manner corresponding to the at least one requirement of the agricultural field as determined in said step of analyzing the at least one image (col.4, lines 8-39). However Hendrickson did not explicitly disclose said aircraft further comprising at least one sensor selected from the group: a barometric altitude sensor, an airspeed sensor, and a roll and pitch sensor, said sensor being operatively connected to a microprocessor disposed on board said miniature aircraft, said microprocessor being adapted to facilitate automatic control of at least pitch and roll of said miniature aircraft. In the same filed of endeavor Abel (see figure.7) disclosed said aircraft further comprising at least one sensor selected from the group: a barometric altitude sensor, an airspeed sensor, and a roll and pitch sensor, said sensor being operatively connected to a microprocessor disposed on board said miniature aircraft, said microprocessor being adapted to facilitate automatic control of at least pitch and roll of said miniature aircraft (col.3, lines 58-67 & col.4, lines 1-22).

It would have been obvious to one in the ordinary skill in the art at the time the invention was made to have incorporated a barometric altitude sensor, an airspeed sensor, and a roll and pitch sensor, said sensor being operatively connected to a microprocessor disposed on board said miniature aircraft as disclosed by Abel in the self powered miniature aircraft used in the method of practicing precision farming as disclosed by Hendrickson in order to facilitate automation of the aircraft to achieve improved control of the aircraft resulting in better implementation of the method of precision farming.

4. As per claim 2 Hendrickson-Abel disclosed the method according to claim 1, wherein said step of conducting an agricultural operation comprises the further step of applying at least one agricultural resource to the agricultural field according to at least one requirement determined in said step of analyzing the at least one image (Hendrickson, col.4, lines 8-38).

5. As per claim 3 Hendrickson-Abel disclosed the method according to claim 1, wherein said step of surveying the agricultural field comprises the further step of causing the aircraft to gain altitude under said aircraft's own power (Abel, col.3, lines 58-67 & col.4, lines 1-22).

6. As per claim 4 Hendrickson-Abel disclosed the method according to claim 3, wherein said step of surveying the agricultural field comprises the further step of launching the aircraft from the ground (Hendrickson, col.11, lines 26-28).

7. As per claim 5 Hendrickson-Abel disclosed the method according to claim 1, comprising the further step of launching the aircraft entirely under said aircraft's own power (Hendrickson, col.11, lines 26-28).

8. As per claim 6 Hendrickson-Abel disclosed the method according to claim 1, wherein said surveying step (c) comprises the further step of controlling the flight path remotely from said miniature aircraft such that the entire agricultural field being

surveyed is overflown in a single flight (Hendrickson, col.11, lines 26-38).

9. As per claim 7 Hendrickson-Abel disclosed the method according to claim 6, wherein said step of controlling the flight path of the aircraft remotely therefrom comprises the further step of causing the aircraft to fly in a sweeping pattern wherein flight of the aircraft is controlled to include at least a first turn in one direction when overflying the agricultural field and a second turn in an opposed direction when overflying the agricultural field (Hendrickson, col.11, lines 26-50).

10. As per claim 9 Hendrickson-Abel disclosed the method according to claim 1, further comprising the steps of: f) providing a radio frequency receiver disposed to communicate with a Global Positioning System, wherein the radio frequency receiver is disposed in communication with the microprocessor, and g) utilizing location signals from the Global Positioning System to control at least partially the flight path of the aircraft (Abel, col.3, lines 58-67 & col.4, lines 1-22).

11. As per claim 10 Hendrickson-Abel disclosed the method according to claim 9, comprising the further step of providing a redundant navigation system complementing location determination provided by said utilizing location signals step (g) (Abel, col.3, lines 58-67 & col.4, lines 1-22).

12. As per claim 12 Hendrickson-Abel disclosed the method according to claim 1, wherein said surveying step (c) comprises the further step of conducting plural complementing flights over the agricultural field being surveyed (Hendrickson, col.11, lines 26-50).

13. As per claim 13 Hendrickson-Abel disclosed the method according to claim 12, wherein said further step of conducting plural complementing flights further comprises the step of utilizing at least one additional miniature aircraft (Hendrickson, col.11, lines 26-29).

14. As per claim 14 Hendrickson-Abel disclosed the method according to claim 1, wherein said flying step (b) comprises the further step of causing the aircraft to fly in a sweeping pattern wherein flight of the aircraft is controlled to include at least a first turn in one direction when overflying the agricultural field and a second turn in an opposed direction when overflying the agricultural field (Hendrickson, col.11, lines 26-50).

15. As per claim 19 Hendrickson-Abel disclosed the method according to claim 1, wherein said flying step (b) comprises flying said miniature aircraft to a predetermined location after overflying the agricultural field being surveyed (Hendrickson, col.11, lines 26-50).

16. As per claim 20 Hendrickson-Abel disclosed the method according to claim 1, wherein said step (b) comprises flying said miniature aircraft to a location outside of the agricultural field being surveyed (Hendrickson, col.11, lines 26-50).

17. As per claim 21 Hendrickson-Abel disclosed the method according to claim 1, wherein said flying step (b) comprises flying said miniature to a location proximate said aircraft's launch location (Hendrickson, col.11, lines 26-50).

As per claim 22 Hendrickson-Abel disclosed the method according to claim 1, wherein said surveying step (c) comprises the further step of acquiring a plurality of images selected from the group: multispectral images hyperspectral images, and ultraspectral images of the agricultural field from the aircraft (Hendrickson, col.10, lines 5-18).

Response to Arguments

18. Applicant's arguments with respect to amended claims 1-7, 9, 10, 12-14 and 19-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ASGHAR BILGRAMI whose telephone number is (571)272-3907. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J. Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AB

/Nathan J. Flynn/

Supervisory Patent Examiner, Art Unit 2154